Improving Chemicals Management in California

Moving Forward Together
Sacramento, CA
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Overview

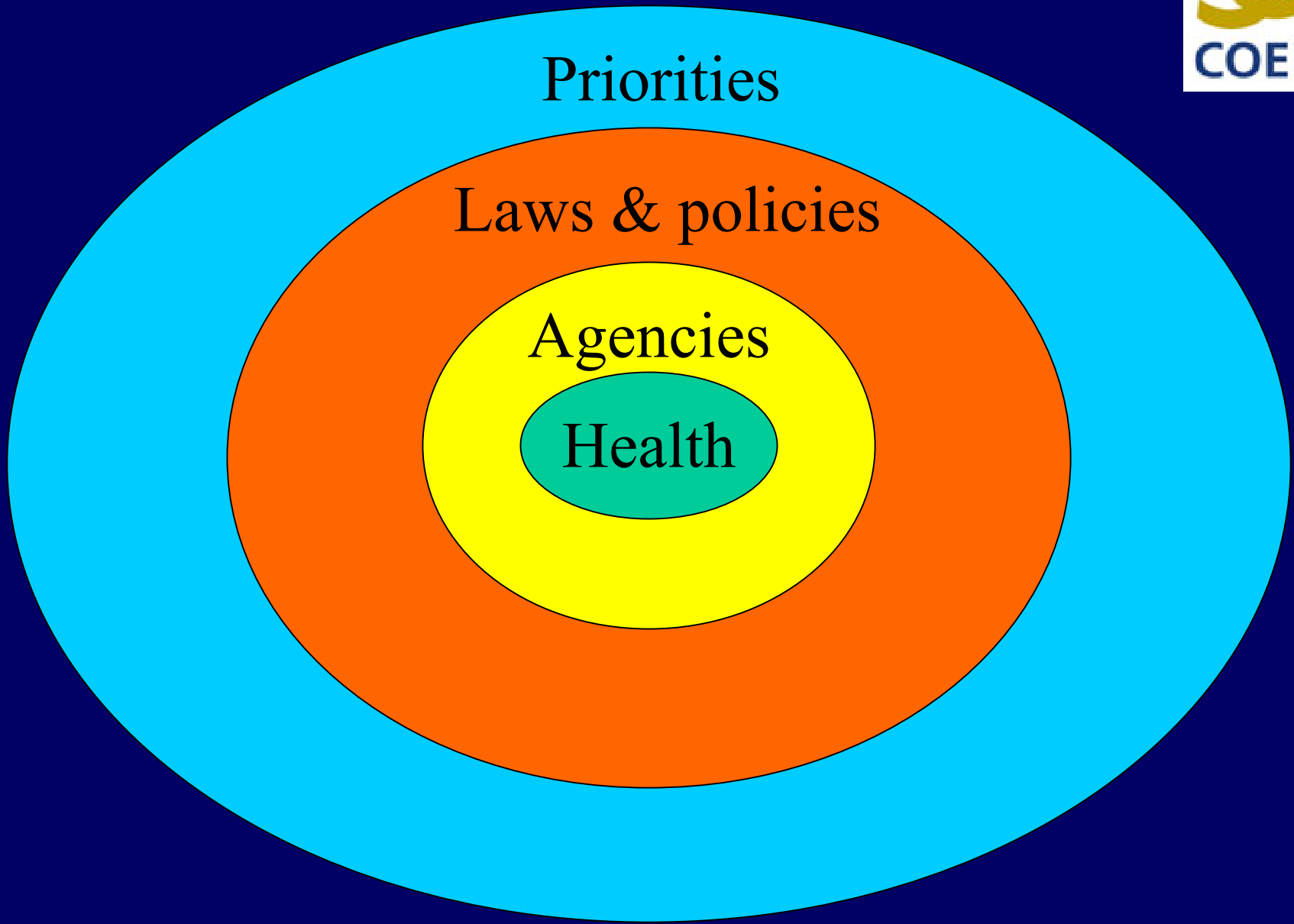
TSCA: U.S. EPA burdened with high procedural & evidentiary requirements in gathering toxicity data from producers and in restricting chemicals of concern;

In California, there are inadequate State-level chemical demographic data. Together, these have resulted in

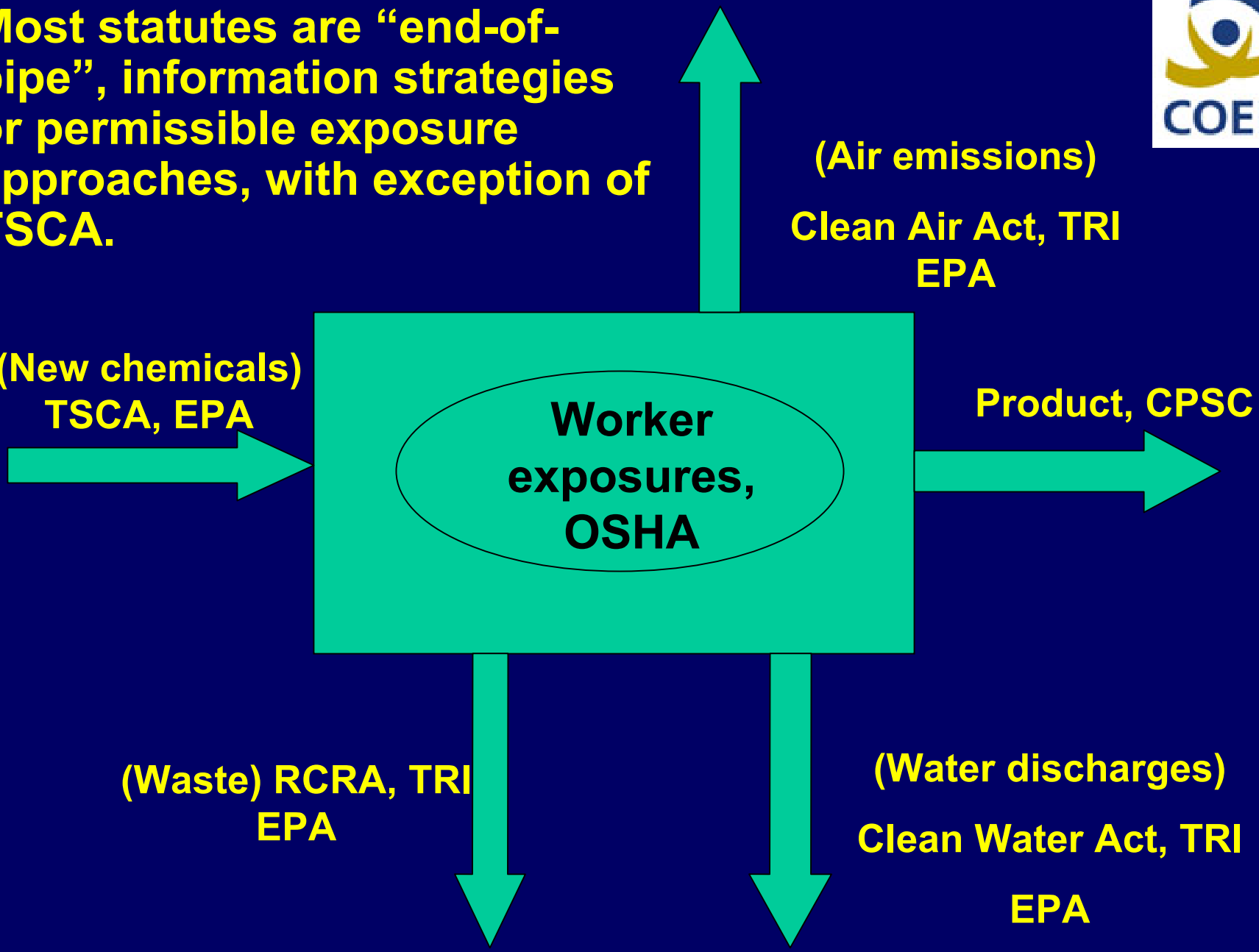
- **substantial gaps in chemical demographic, toxicity and exposure data**
- **an inability to prioritize chemical hazards & risks**
- **various efforts by the State to act despite data gaps**

Needed in California: To address data gaps, transfer evidentiary burden to industry, improve State authority to regulate as a condition of market entry.

State of knowledge



Most statutes are "end-of-pipe", information strategies or permissible exposure approaches, with exception of TSCA.



State of Knowledge - TSCA

- TSCA addresses 72,000 industrial chemicals "prior to manufacturing", except;
- Substantial procedural and evidentiary burden on EPA to acquire toxicity data from industry and to restrict use
- "Existing" chemicals in 1979 "grandfathered"; no data required (= 99% of chemicals in commerce today).
- EPA reliance on voluntary initiatives (HPV Challenge program). Up to 60% of 2,800 HPV chemicals now tested. 70,000 others mostly unknown.

State of Knowledge - California

- Inadequate State-level data on industrial chemicals in commerce:
  1) Identification
  2) Quantities
  3) Distribution
  4) Use
  5) Toxicity
  6) Exposure

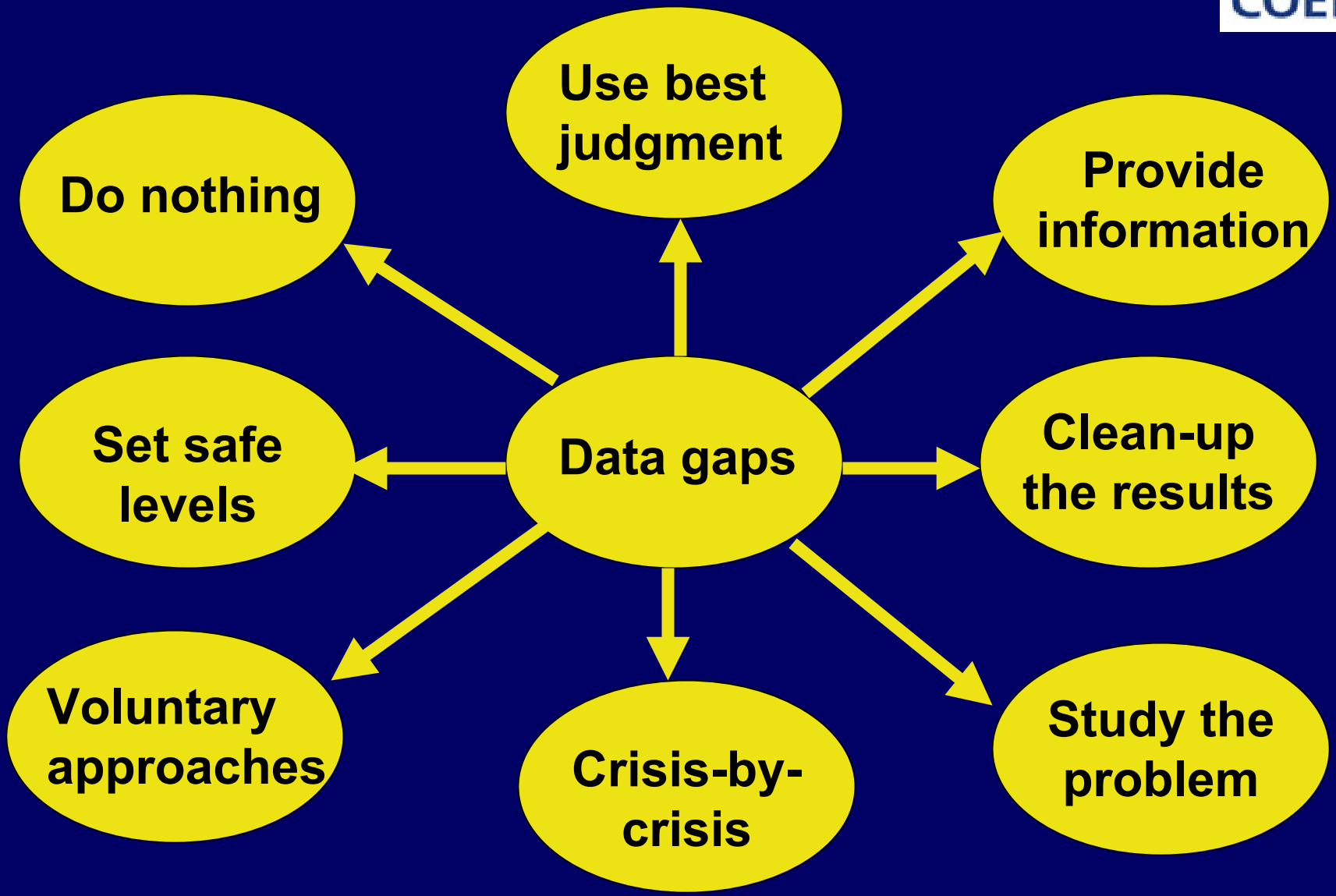
- CUPA and PUR system flawed but promising.

We are therefore unable to systematically evaluate and prioritize chemical hazards in California.

Data gap consequences:

- **Legislature: Inability to recognize (and allocate resources to) priority chemical concerns and their diseases;**
- **Government Agencies: Inability to systematically address hazards, track disease and exposure trends; target outreach;**
- **Research Institutions: Inability to characterize exposure, risk and disease outcomes of priority chemicals;**
- **Business and industry: Increased and often conflicting regulations; market failures (e.g. unanticipated costs);**
- **Public, labor and NGOs: Inability to ID and advocate for changes related to priority chemical concerns.**

Strategy options, given inadequate data



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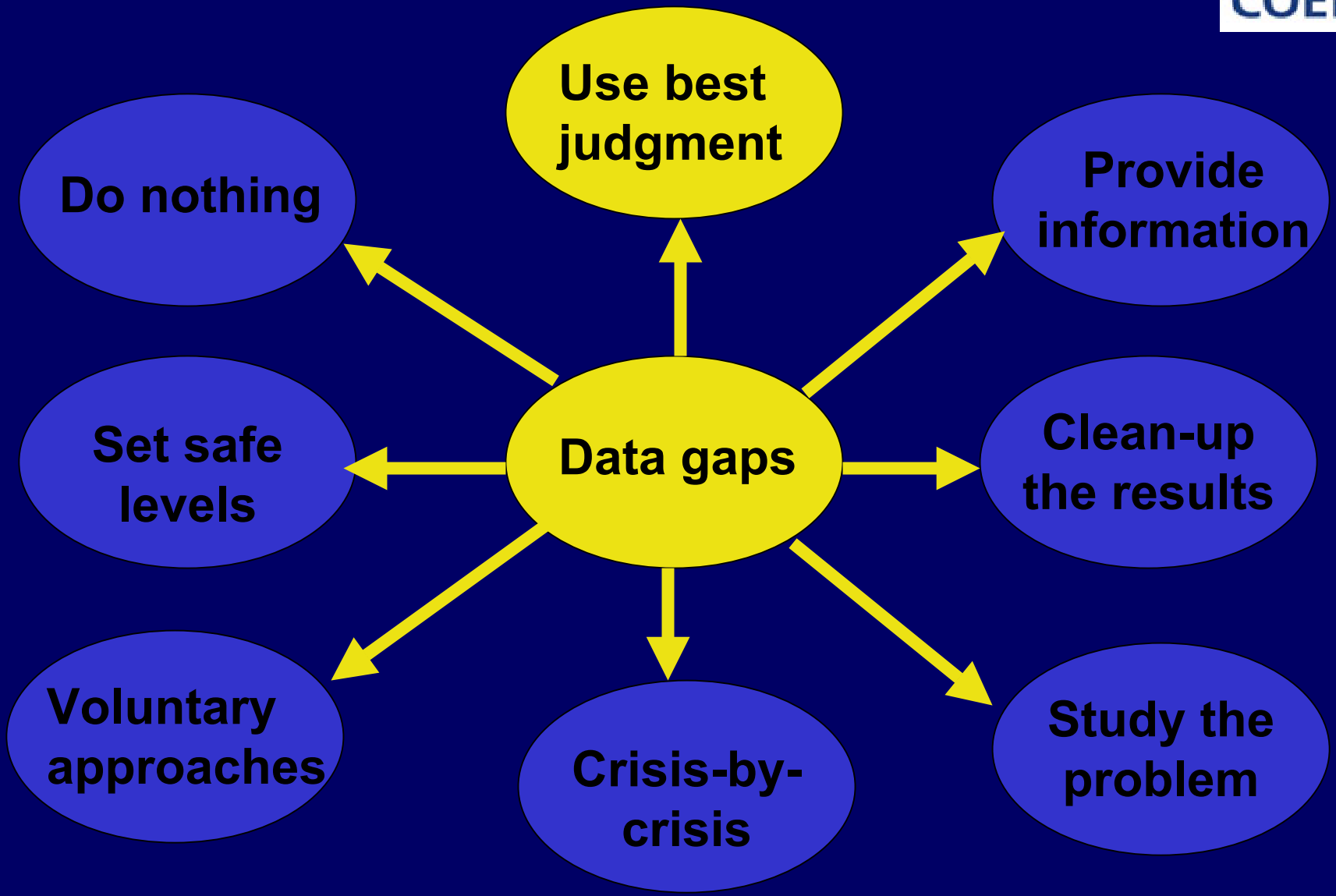
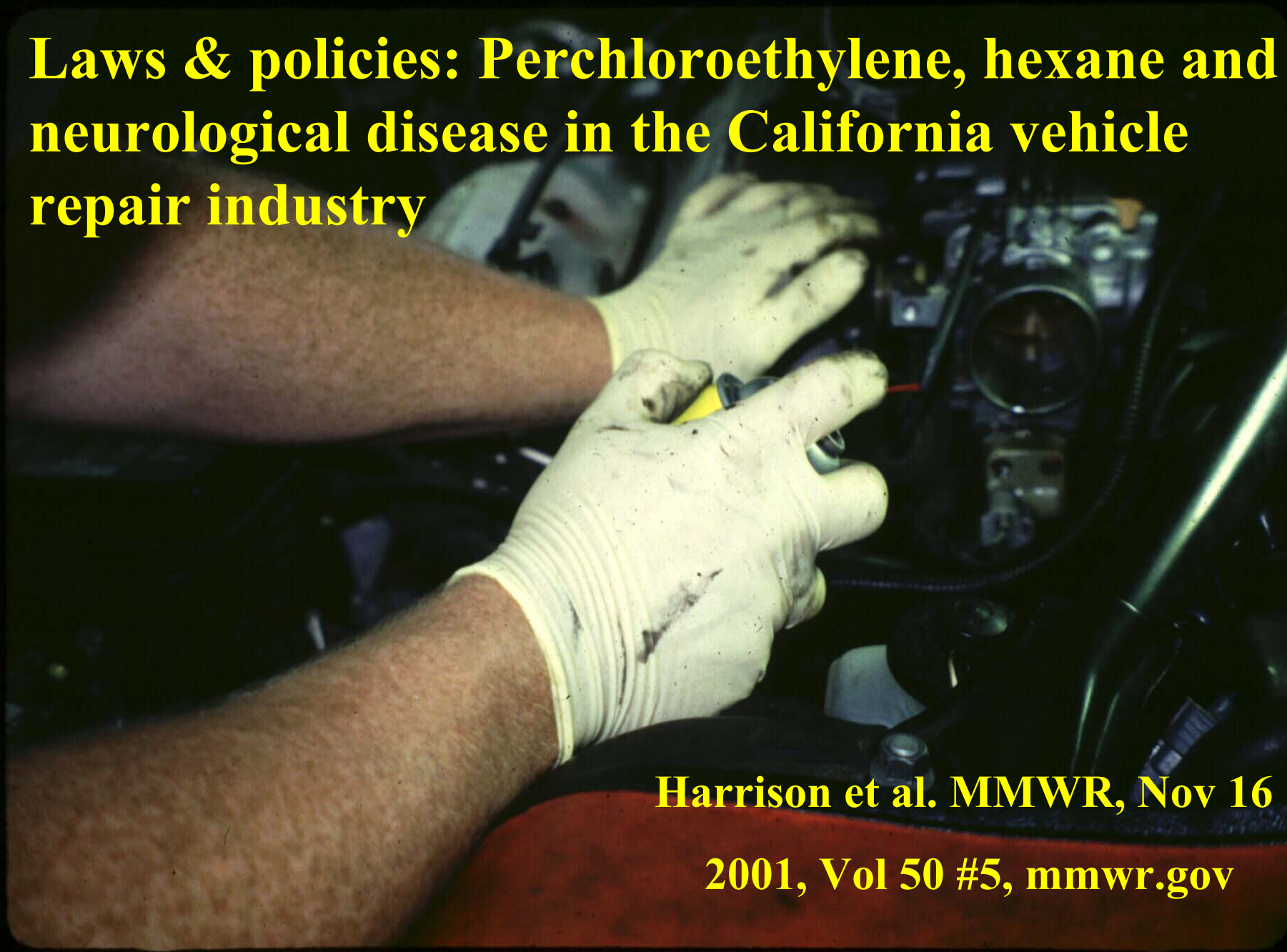


Laws & policies: Perchloroethylene, hexane and neurological disease in the California vehicle repair industry



Harrison et al. MMWR, Nov 16

2001, Vol 50 #5, mmwr.gov

What is hexane?

- A petroleum distillate used for cutting grease and oil
- A mixture of isomers; 20-80% is *n-hexane*
- n-Hexane identified in 1964 as a peripheral neurotoxin
- Co-exposure with acetone may amplify effects

Cases #1, #2 #3:
25, 45 and 52 y/o vehicle repair technicians

- Presentation
  - Numbness from hips to feet, mid-forearm to fingers, loss of grip strength
  - Ataxia
  - Totally disabled, unemployed

- Exposure
  - Daily occupational exposure to cleaning solvents containing 10 to 90% hexane, blended with acetone.

Follow-up cases

11 additional technicians fit case definition for hexane-induced peripheral neuropathy.

Some disabled, unemployed; some employed with early signs of disease.

(Use of photographs approved by Committee for the Protection of Human Subjects, UC Berkeley, file #2000-9-43)


About 85,700 vehicle repair technicians are employed in CA.
(CA EDD, 2000)
COEH

Chemical demographic data gap:

Working with OHB, we were unable to identify sales trends, volumes in commerce, use locations or suppliers of hexane-based products in the vehicle repair industry. We attempted voluntary industry surveys until ARB database identified.

Over five million aerosol cans of brake cleaning solvent are used in CA repair shops each year *(ARB, 2000).*

Aerosol brake cleaning solvents used in 14,400 CA vehicle repair shops *(ARB, 2001)*

- Chlorinated Solvents
- 26% = 3,700 CA shops
  - Perchloroethylene
  - Trichloroethylene (TCE)
  - Methylene Chloride

- Non-chlorinated Solvents
- 50% = 7,200 CA shops
  - Hexane
  - Acetone

  ⇨ 60%
  - Toluene
  - Heptane
  - Methyl Ethyl Ketone
  - Xylene
  - Methanol

Hexane is a well-known neurotoxic solvent, so….

- When and why was hexane introduced into the California vehicle repair industry?
- How does this inform our thinking about chemicals management?

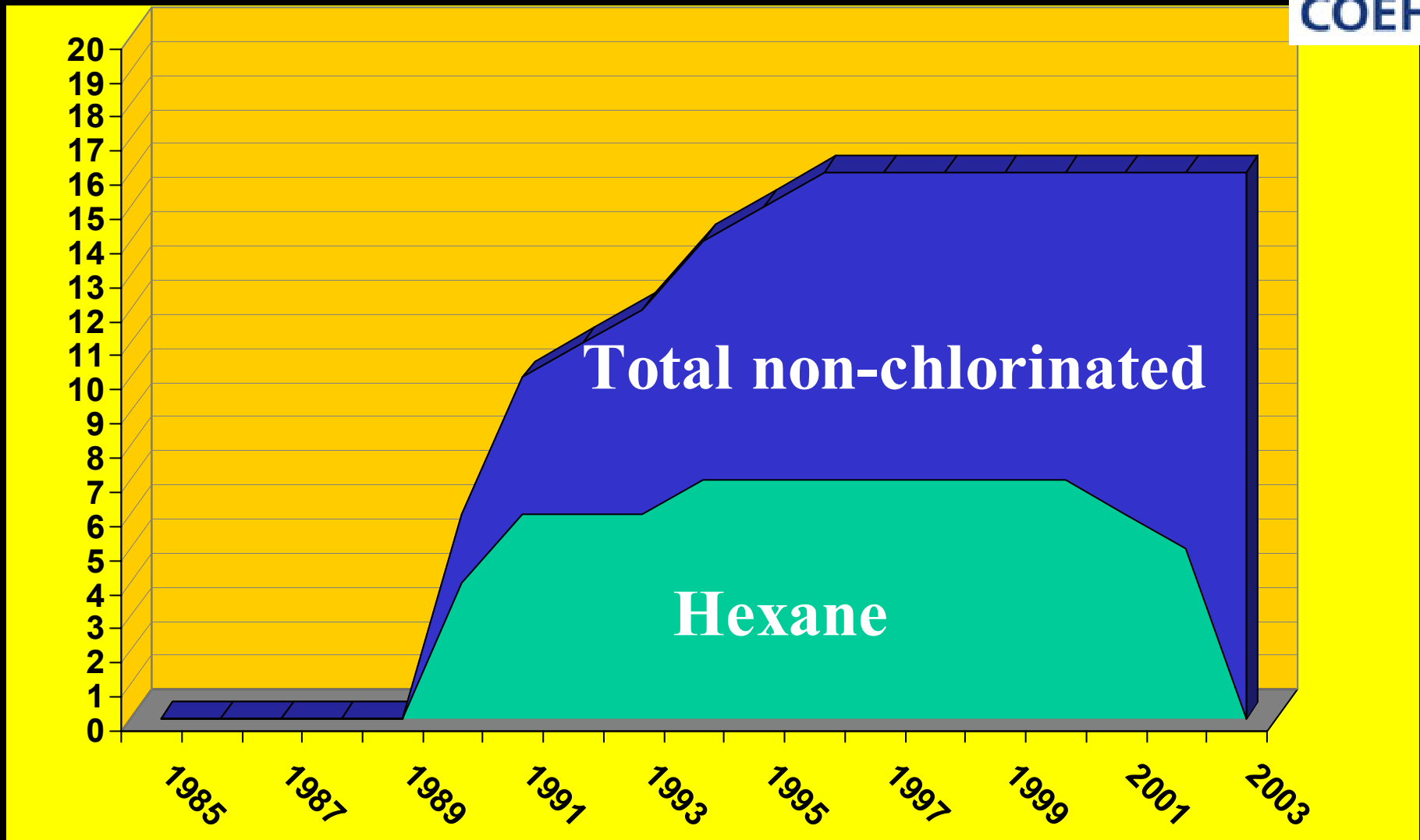
Brake Cleaner National Survey Project

- 23 solvent suppliers sold products in the CA vehicle repair industry *(ARB 1997) .*
- 18 of these suppliers represented over 90% of solvent sales in California *(ARB, 1997).*
- Follow-up interviews with 13 industry representatives, four ARB staff, five shop owners.

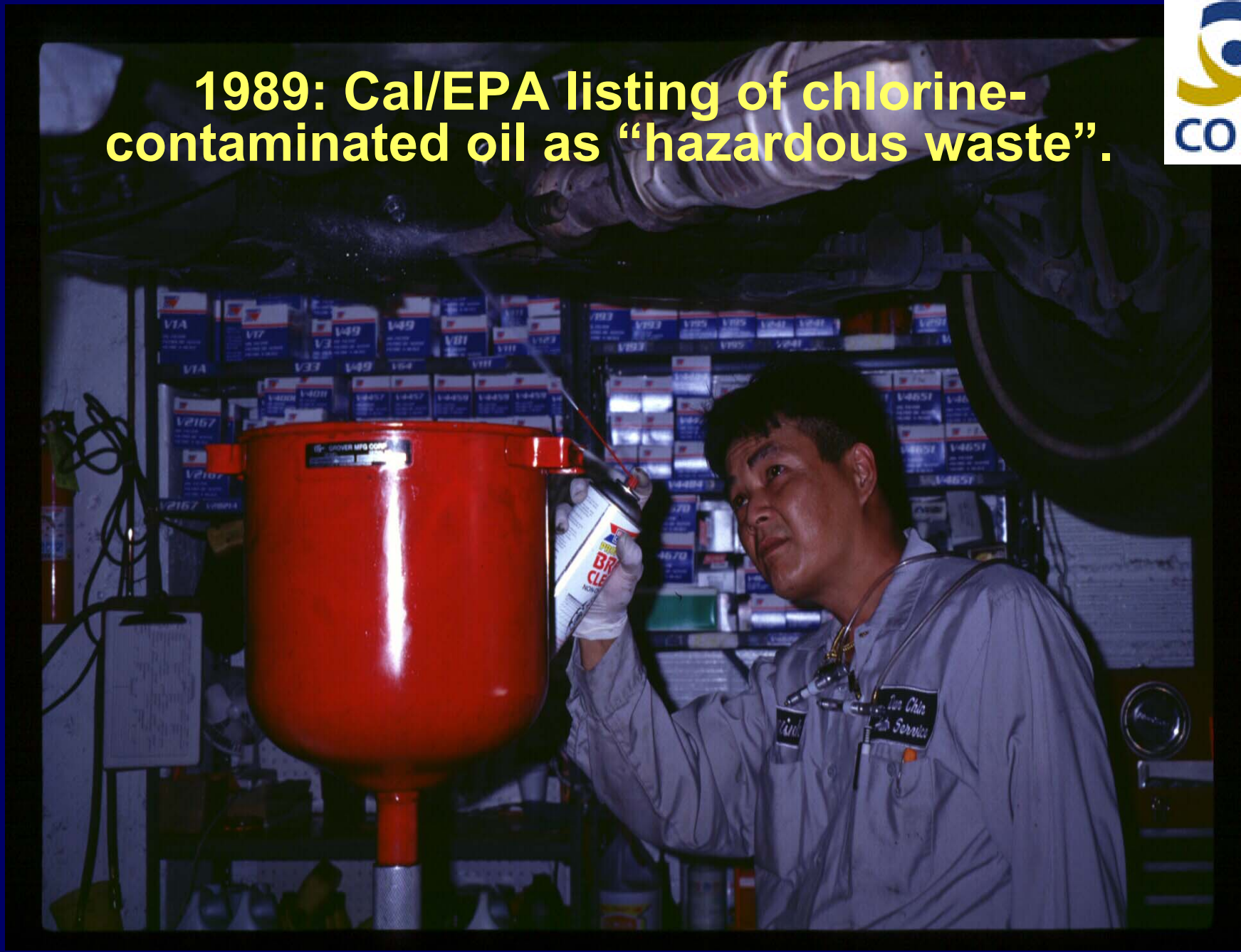
Brake Cleaner National Survey Project: Results

- **Usable response rate: 17/23 (74%).**
- **All large suppliers represented (>90% sales).**

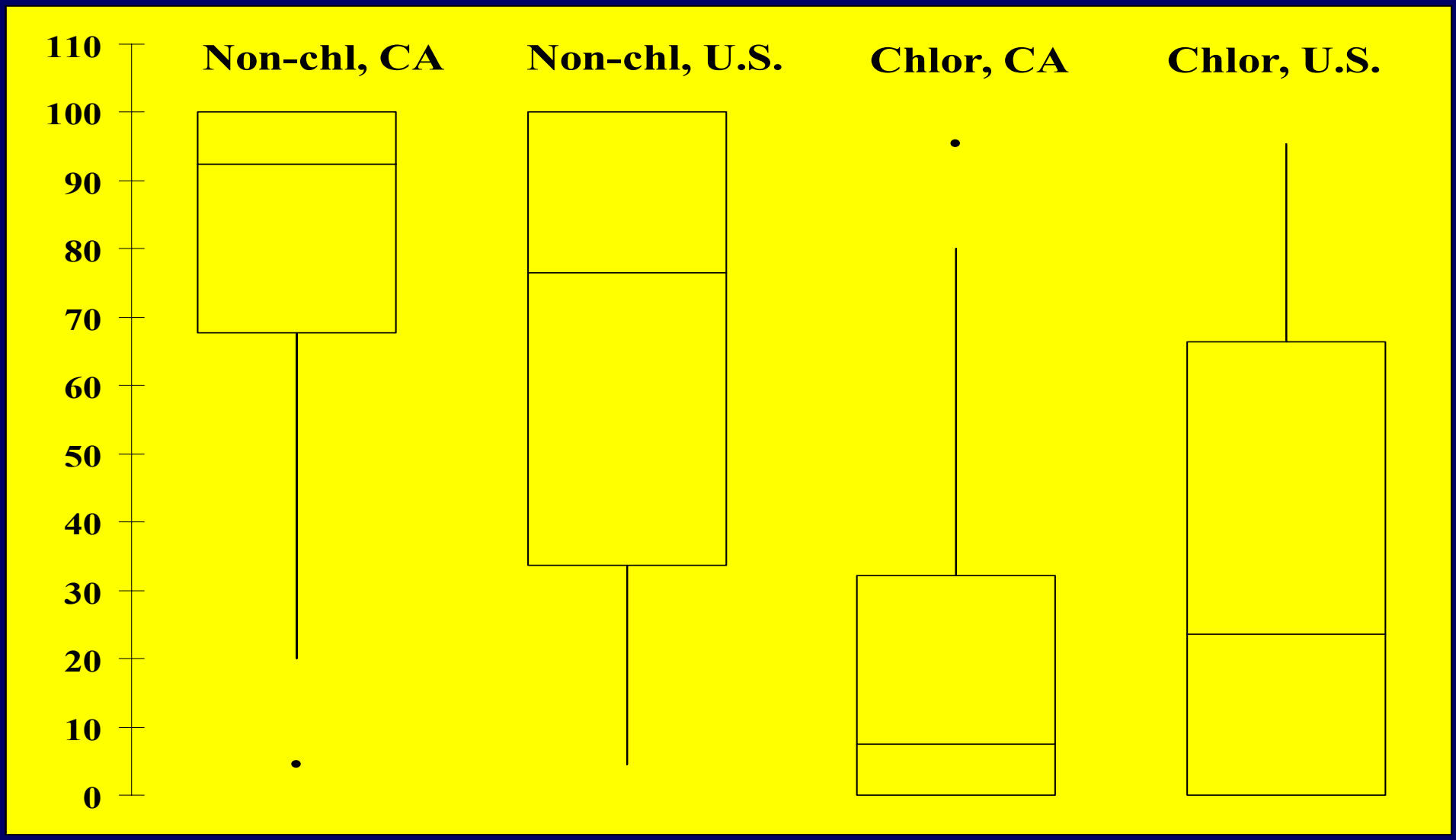
Manufacturers producing hexane-based brake-cleaning products, 1988 – 2003 (hexane = 7/17)



1989: Cal/EPA listing of chlorine-contaminated oil as “hazardous waste”.



Percent of sales of aerosol brake cleaning products in CA and the U.S., FY 2000 (n = 17 firms, 90% of CA sales)



Agency effectiveness:

<u>Generally</u>: In an environment of incomplete information and in the absence of a comprehensive, integrated chemical management program, acting on our best judgment can result in the generation of new, unanticipated consequences.

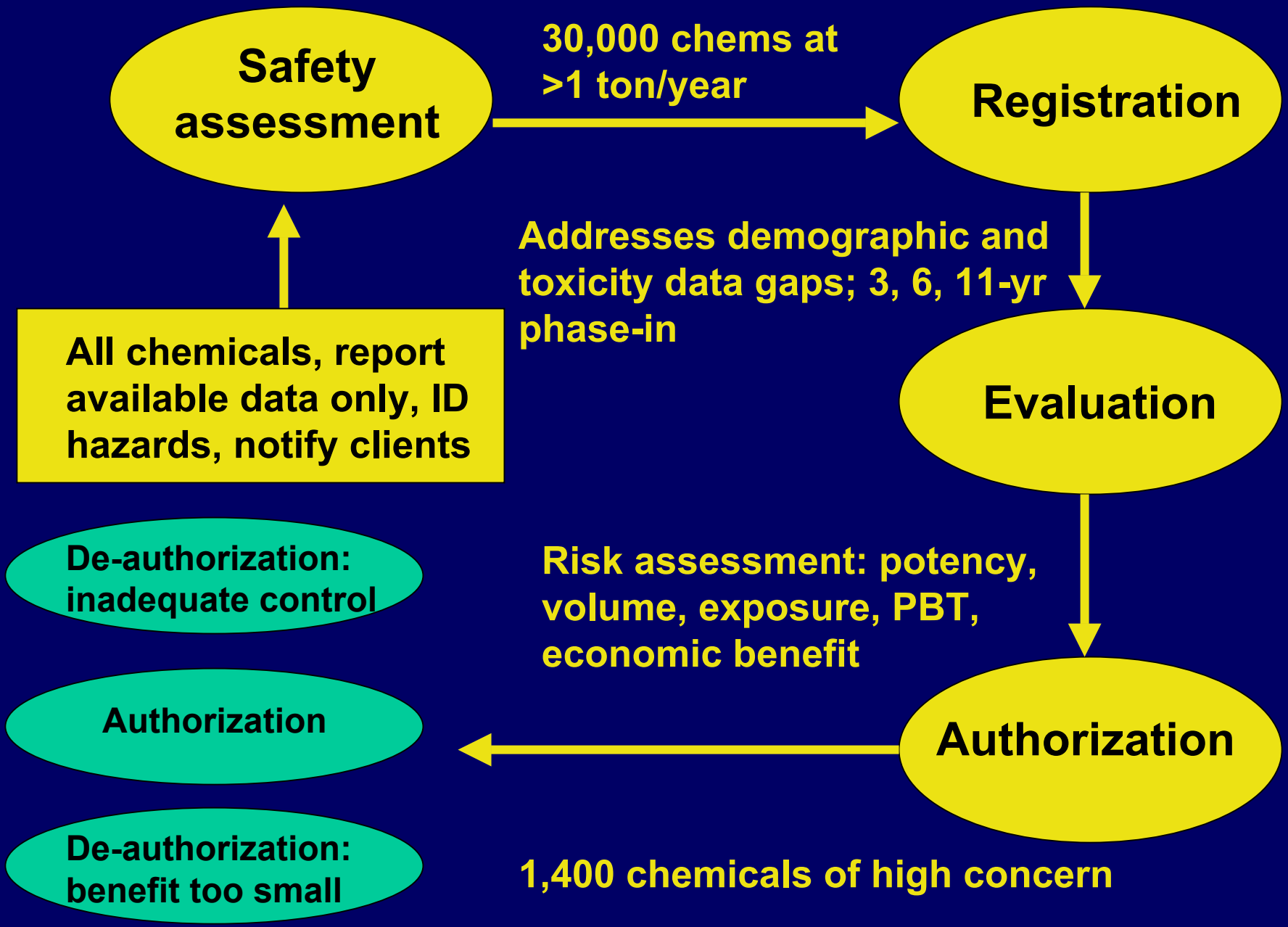
<u>More narrowly</u>: Product reformulations engendered by California regulations will likely have national implications in the affected industry.

New Directions in European Union Chemicals Policy

- Faced with similar problems, EU moving forward with major restructuring of chemicals policy
- Centerpiece is the REACH initiative (Registration, Evaluation and Authorization of Chemicals)
- REACH represents an opportunity for broad-based reevaluation of chemicals policy in the U.S.

New Directions in The European Union Chemicals Policy: REACH

- Based on a 2001 White Paper issued by the European Commission
- A duty of care on chemical producers & importers
- Protection of internal market
- Stimulate innovation in safer chemicals
- Substitute chemicals of high concern
- Address data gap between “new” and “existing” chemicals
- Reduce animal testing


Safety assessment
30,000 chems at >1 ton/year
Registration
Addresses demographic and toxicity data gaps; 3, 6, 11-yr phase-in
All chemicals, report available data only, ID hazards, notify clients
Evaluation
De-authorization: inadequate control
Risk assessment: potency, volume, exposure, PBT, economic benefit
Authorization
Authorization
De-authorization: benefit too small
1,400 chemicals of high concern

REACH: the new EU Chemicals Agency

- Centralized database on chemicals under registration & authorization
- Centralized registration; integrated analysis to avoid risk shifting; authorization and enforcement
- Introduction of socio-economic factors in risk assessment
- Receiver of registration fees, forum for exchange of information

REACH: areas of debate

- "Offshoring" of chemical industry
- Nature of "control" of high hazard chemicals
- Nature of socio-economic factors in risk assessment
- Confidentiality of data

Imported electronic waste, Lianjiang River, Guiyu, China

Electronic waste recovery workers, Guiyu, China

Electronic waste recovery workers, Guiyu, China
Hazards: lead, phosphor dust, arsenic, cadmium, barium, silver, selenium, chromium; dumping and combustion of plastics mercury

Toner recovery worker, Guiyu, China
Carbon black (IARC 2A carcinogen); cartridge dumping

Burning of plastic-encased printer and motor parts to recover metals, Guiyu, China

REACH: Opportunities for California

- **Innovation: Authorization process is driver of innovation. Meeting EU standards could introduce R & D in "safer chemical products" by California producers**

- **Data: Producers will generate testing data to maintain EU markets; these data could be available to California chemical industry**

- **Harmonization: International harmonizing of chemical testing, evaluation and authorization standards reduces barrier to change**